PBW

Consulting Engineers and Scientists

PASTOR, BEHLING & WHEELER, LLC
2201 Double Creek Drive, Suite 4004
Round Rock, TX 78664

Tel (512) 671-3434
Fax (512) 671-3446

November 20, 2006
(PBW Project No. 1352)

VIA OVERNIGHT DELIVERY

received
11-24-06

Mr. M. Gary Miller, Remedial Project Manager
U.S. Environmental Protection Agency, Region 6
Superfund Division (6SF-AP)
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Ms. Barbara A. Nann, Assistant Regional Counsel
U.S. Environmental Protection Agency, Region 6
Superfund Division (6RC-S)
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Re: RI/FS Field Sampling Plan and Quality Assurance Project Plan Replacement Pages, Gulfco Marine Maintenance Site, Freeport, Texas

Dear Mr. Miller and Ms. Nann:

On behalf of LDL Coastal Limited LP (LDL), Chromalloy American Corporation (Chromalloy) and The Dow Chemical Company (Dow)(collectively referred to as Respondents in the UAO), Pastor, Behling & Wheeler, LLC (PBW) has prepared the enclosed replacement pages to address the modifications or additions to the RI/FS Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP). These replacement pages describe details of the fish tissue sampling and analytical program approved in your letter dated November 14, 2006. Where indicated below, please replace previous versions of pages included in the RI/FS FSP and QAPP with these pages. In accordance with Paragraph 52 of the UAO, I certify that I have been fully authorized by the Respondents to submit these pages and to legally bind all Respondents thereto.

The enclosed pages are as follows:

Field Sampling Plan

- Text - Pages 39 through 40 (Per our discussions on November 15, 2006, these replacement pages have been revised to reflect the placement and shipment of fish tissue samples in glass sample jars, rather than wrapping the samples in aluminum foil and placing them in Ziploc bags as originally indicated).
- Appendix A – BESI SOP 304 – Collection of Blue Crabs Using Commercial Crab Traps (Although included in the list of SOPs, this SOP was inadvertently omitted from the final version of the FSP).

- Appendix A – BESI SOP 509 – Fish Tissue Processing (This SOP has been revised to reflect the aforementioned use of sample jars for fish tissue samples).
- Appendix B - Table B-5 (This is an additional table that provides the analytical methods for the fish tissue analytes).

Quality Assurance Project Plan

- Appendix E – Tables E-1 through E-4 (These tables provide quality assurance/quality control details related to the collection and analysis of fish tissue samples).

In addition to these paper copies, a CD containing Adobe files of the above pages is enclosed.

Thank you for the opportunity to submit these replacement pages. Should you have any questions, please do not hesitate to contact me.

Sincerely,

PASTOR, BEHLING & WHEELER, LLC

Eric F. Pastor, P.E.
Principal Engineer

Enclosure (to Mr. Miller) - four copies of each replacement page and one CD

cc (one copy of each replacement page):

Ms. Luda Voskov - Texas Commission on Environmental Quality
Mr. Larry Champagne - Texas Commission on Environmental Quality
Ms. Jessica White - National Oceanic and Atmospheric Administration
Ms. Tammy Ash - U.S. Fish and Wildlife Service
Mr. Brian Cain - U.S. Fish and Wildlife Service
Mr. Richard Seiler - Texas Commission on Environmental Quality
Mr. Keith Tischler - Texas General Land Office
Mr. Don Pitts - Texas Parks and Wildlife Department
Mr. Andy Tirpik - Texas Parks and Wildlife Department
Mr. Luis Vega – EA Engineering, Science and Technology
Dr. Bill Quast – Benchmark Ecological Services, Inc.
Ms. Taryn Scholz – Quality Assurance Associates, LLC
Mr. Ed Gallagher – Gulf Coast Analytical Laboratories, Inc.

cc (letter only):

Mr. Brent Murray - Sequa Corporation
Mr. Rob Rouse - The Dow Chemical Company
Mr. Donnie Belote – The Dow Chemical Company
Mr. Allen Daniels - LDL Coastal Limited, LP
Mr. F. William Mahley - Strasburger & Price, LLP
Mr. James C. Morriss III - Thompson & Knight, LLP
Ms. Elizabeth Webb - Thompson & Knight, LLP

ATTACHMENT A

FIELD SAMPLING PLAN REPLACEMENT PAGES

5.9.4.1 Finfish Tissue

Finfish will be weighed, measured, scaled, and rinsed with DI water. Data will be recorded on tissue processing data sheets. Once a fish has been scaled it will be placed in clean plastic bags and stored on ice until all samples have been scaled. Edible tissue filets (with skin) will be processed on pre-cleaned Teflon cutting boards with pre-cleaned stainless steel filet knives. EPA Guidance (EPA, 2000) recommends that the fillets of scaled finfish (e.g., red drum, black drum, croaker, seatrout, etc.) be analyzed with the skin intact. Edible filets will be collected from both sides of the fish, placed on hexane-rinsed aluminum foil, and weighed in grams. The filets will then be placed in glass sample jars provided by the laboratory

Most fish samples will be taken from a single specimen, but if a single fish can not provide the required sample volume, the fillets from multiple fish will be composited. If more than one organism is to be composited to complete a sample, the individual organisms will be filleted, filets will be weighed, and the filets will be combined and placed in glass sample jars provided by the laboratory

Sample jars will be labeled with collection date, time, personnel, species, and station ID. The sample jar will then be placed in a Ziploc bag and stored at 4 degrees Celsius. A Chain of Custody will be completed following the procedures detailed in Section 6.1.2.

5.9.4.2 Blue Crab Tissue

Blue crabs will be weighed, measured, rinsed with DI water, and placed on pre-cleaned Teflon cutting boards. Data will be recorded on tissue processing data sheets. Edible blue crab tissue (i.e., muscles inside chelipeds and musculature for periopods) will be removed using pre-cleaned scalpels and placed on hexane rinsed aluminum foil for weighing.

In order to provide the analytical laboratory with a sufficient quantity of tissue for all analyses, the edible tissue from five adult blue crabs from the same zone will be composited for each sample. The weight of edible tissue will be recorded for each individual crab and for the total edible tissue per sample. A pre-cleaned sample jar will be labeled with the collection date, time, personnel, species, and station ID.

The sample jar will then be placed in a Ziploc bag and stored at 4 degrees Celsius. A Chain of Custody will be completed for all samples collected.

5.10 DECONTAMINATION PROCEDURES

Site personnel will perform decontamination in accordance with PBW SOP No.13: Equipment Decontamination (Appendix A) will be performed for all equipment when brought on the Site, between sample locations, when necessary between sample intervals, and before removing it from the Site. Certain disposal equipment meant to be used only once and discarded will be decontaminated prior to use, unless the equipment is properly packaged and sealed. All non-disposable components of the sampling equipment that will not have direct contact with the samples collected (i.e., augers, probe rods, drill pipe, etc.) will be decontaminated as follows:

- Potable water rinse;
- Liqui-nox® detergent wash;
- Potable water rinse;
- De-ionized (DI) water rinse (3 times); and
- Air dry.

All sampling equipment that contacts the soils, groundwater, sediments, or surface waters that will be submitted for analyses (i.e. coring equipment, compositing bowls, scoops and spoons) will be decontaminated as follows:

- Potable water rinse;
- Liqui-nox® detergent wash;
- DI water rinse;
- Liqui-nox® detergent wash;
- DI water rinse (3 times); and
- Air dry.

STANDARD OPERATING PROCEDURE
SOP-BESI-304

TITLE: Collection of Blue Crabs Using Commercial Crab Traps

The attached Standard Operating Procedure was revised by:

Katy Garcia	Katyn. Garcia	09/14/05
Name	**Signature**	**Date**

The attached Standard Operating Procedure was reviewed by:

David Marhofer	David Marhofer	09/14/05
Name	**Signature**	**Date**

Revision No. 1

Collection of Blue Crabs Using Commercial Crab Traps

1.0 PURPOSE AND APPLICABILITY

This SOP describes the proper procedures for collecting legal size Blue Crabs with commercial crab traps.

2.0 DEFINITIONS

There are no definitions applicable for this SOP.

3.0 HEALTH AND SAFETY CONSIDERATIONS

3.1 Nitrile gloves and approved safety glasses should be worn when conducting this procedure in order to protect personnel from possible contaminants that may be present in the water.

3.2 Proper lifting techniques should be utilized when handling heavy objects.

3.3 Personnel will be trained on how to handle blue crabs to avoid cuts caused by chelae or shells.

3.4 General boat safety criteria should be practiced at all times and includes awareness of other ship activities, wearing life jackets, monitoring marine radio, etc.

4.0 QUALITY ASSURANCE CONSIDERATIONS

This SOP must not be implemented until trained personnel are available to conduct this procedure. All necessary equipment, space, containers, and documentation materials must also be available before this procedure is conducted.

5.0 RESPONSIBILITIES

The project manager must assign a task manager to conduct this procedure and provide all the necessary information and data sheets to conduct the study. The task manager has responsibility for assuring that:

- All necessary equipment is available
- Health and safety precautions are taken
- Enough information has been provided to locate sample area and sample stations.

6.0 EQUIPMENT AND MATERIALS

- Commercial Crab Traps
- Floats and Ropes
- Bait
- Permit Tags
- Plastic bucket or tub (sorting container)
- Re-sealable plastic bags
- Labels
- Permanent marker pens
- Ice chest with ice

7.0 TRAINING

Prior to conducting this SOP, responsible personnel (task manager and technicians) must read and understand this SOP.

8.0 METHODS

8.1 A rope greater then the depth of the water where sampling will occur should be attached to the top of the crab trap. The opposite end of the rope may have a float attached to it when sampling in open water. If sampling next to structures or land the rope may not need a float. Permit tags should be secured to the crab traps.

8.2 Crab traps will be baited with commercial crab bait (when available) or bait fish captured from established 'clean' areas.

8.3 Traps will be placed in water so as to insure they are set right side up. It may be necessary to weight down or tie traps off in areas of high current or when set close to heavy ship traffic.

8.4 The catch should be placed in a bucket or tub for sorting. After target organisms are removed, the remainder should be returned to the water.

8.5 Collected Blue Crabs will be placed in labeled re-sealable plastic bags, and put on ice in a cooler.

9.0 QUALITY CONTROL CHECKS

Clean gloves will be worn at all times when handling the sampling equipment and samples.

10.0 DOCUMENTATION

General descriptive information on the sample site, catch, and field data should be entered in the field data log. Observations may include the following:

- Characteristics of the sample area, bottom type, vegetation, and water depth,
- Size of the area sampled,
- List of species collected, and,
- Number and/or weight of organisms collected,
- Water temperature, salinity, and conductivity.

NOTE:

FOLLOW ONLY THE MOST RECENT ISSUE OF THIS SOP.

STANDARD OPERATING PROCEDURE
SOP-BESI-509

TITLE: Fish Tissue Processing

The attached Standard Operating Procedure was revised by:

Neil Henthorne	Neil Henthorne	11/16/06
Name	**Signature**	**Date**

The attached Standard Operating Procedure was reviewed by:

David Marhofer	David Marhofer	11/16/06
Name	**Signature**	**Date**

Revision No. 2

FISH TISSUE PROCESSING

1.0 PURPOSE AND APPLICABILITY

This procedure provides the basic methodologies for laboratory preparation of edible fish tissue samples for analysis.

2.0 DEFINITIONS

There are no definitions applicable for this SOP.

3.0 HEALTH AND SAFETY CONSIDERATIONS

3.1 Nitrile gloves should be worn when performing this procedure.

3.2 Safety glasses should be worn while filleting tissue and while using hexane.

3.3 Use of hexane should be under a fume hood or in a well ventilated area.

4.0 QUALITY ASSURANCE CONSIDERATIONS

This SOP must not be implemented until trained personnel are available to conduct this procedure. All necessary equipment, space, containers, and documentation materials must also be available before this procedure is performed.

5.0 RESPONSIBILITIES

The project manager must assign a task manager to conduct this procedure. The task manager has responsibility for assuring that:

- All necessary equipment is available; and
- All samples are prepared according to this procedure.

6.0 EQUIPMENT AND MATERIALS

- Nitrile gloves
- Fish scaler
- Aluminum foil
- Electric fillet knife, fillet knife
- Stainless steel fillet blades
- Cutting board
- Top loading balance (0.01 gm)
- Cooler (chest or upright)
- Decontamination materials: DI water, soap, ultra-pure hexane
- Labels
- Marking pens
- Freezer grade Zip Loc
- Finfish processing forms
- Chain-of-Custody forms

7.0 TRAINING

Prior to performing this SOP, responsible personnel (task manager and technicians) must read and understand this SOP.

8.0 METHODS

8.1 Pre-Preparation

Unwrap and thoroughly rinse each fish with DI water to remove any gross field contaminants. Measure, weigh, and label each fish according to appropriate SOP (SOP-BESI-508).

8.2 Fish Scale Removal Procedure

Remove fish scales from fish so as scales will not be processed into the edible tissue sample. Wear nitrile gloves and safety glasses when scaling fish. Once the fish has been scaled, rinse the fish with DI water, and store on ice until the sample can be filleted.

8.3 Body Tissue Removal Procedure

Fillet the fish with your choice of pre-cleaned utensils (electric fillet knife, regular fillet knife). Sample fillet should represent the edible portion of each fish. Record the weight of the tissue removed from each fish. Place tissue sample into pre-cleaned sample jar, double-bag the sample jar in re-sealable Ziploc bags, and place in secure cold storage.

8.4 Decontamination Procedures

Decontamination of the equipment used should follow this general sequence:

1. Rinse with tap water and brush away large pieces of tissue.
2. Clean apparatus with soapy water and brush.
3. Rinse soap away first with tap water and then with DI water.
4. Rinse thoroughly with ultra-pure hexane.
5. Finally, triple rinse with DI water.

8.5 Equipment Storage

After use of all equipment thoroughly decontaminate and wrap or cover all items with clean hexane-rinsed aluminum foil. Store equipment in an appropriate location.

8.6 Sample Handling and Shipment

Store samples in secure cold storage until shipment. Ship samples in coolers to the analytical laboratory via overnight carrier.

9.0 QUALITY CONTROL CHECKS

Quality control checks required for fish tissue processing may consist of rinsate blanks to ensure the processing equipment (i.e., fillet knives) are free of chemical contamination. If required, rinsate blanks shall be collected by first decontaminating the equipment using the appropriate procedure for the analyses being conducted. Next, the equipment will be either soaked or rinsed with deionized water and collected for chemical analysis.

10.0 DOCUMENTATION

When sending tissue samples to the analytical laboratory, follow the appropriate SOP for chain-of-custody and shipping documentation requirements. Indicate in laboratory logbook that samples have been prepared and sent to the analytical laboratory for analysis. Sign and date all chart forms and logbook pages, as appropriate.

TABLE B-5 - METHOD SELECTION WORKSHEET - FISH TISSUE

Analytes		Reporting Requirement (Y or N)	Medium	Critical Parameters				Routine Available Methods
Chemicals of Interest	CAS No.			ID Only (ID) or ID Plus Quantitation (ID+Q)	Preliminary Screening Value (PSV)	Target Method Detection Limit[1]	Units	
METALS								
Lead	7439-92-1	Y	Fish Tissue	ID+Q	NA	0.187	mg/Kg	SW-846 6010B
Silver	7440-22-4	Y	Fish Tissue	ID+Q	NA	0.053	mg/Kg	SW-846 6010B
PESTICIDES								
4,4'-DDE	72-55-9	Y	Fish Tissue	ID+Q	NA	0.00745	mg/Kg	SW-846 8081A
4,4'-DDT	50-29-3	Y	Fish Tissue	ID+Q	NA	0.00595	mg/Kg	SW-846 8081A
SVOCs								
Benzo(a)anthracene	56-55-3	Y	Fish Tissue	ID+Q	NA	0.0881	mg/Kg	SW-846 8270C
Benzo(a)pyrene	50-32-8	Y	Fish Tissue	ID+Q	NA	0.0584	mg/Kg	SW-846 8270C
Benzo(b)fluoranthene	205-99-2	Y	Fish Tissue	ID+Q	NA	0.0467	mg/Kg	SW-846 8270C
Benzo(k)fluoranthene	207-08-9	Y	Fish Tissue	ID+Q	NA	0.0392	mg/Kg	SW-846 8270C
Chrysene	218-01-9	Y	Fish Tissue	ID+Q	NA	0.0298	mg/Kg	SW-846 8270C
Dibenz(a,h)anthracene	53-70-3	Y	Fish Tissue	ID+Q	NA	0.0494	mg/Kg	SW-846 8270C
Hexachlorobenzene	118-74-1	Y	Fish Tissue	ID+Q	NA	0.029	mg/Kg	SW-846 8270C
Indeno(1,2,3-cd)pyrene	193-39-5	Y	Fish Tissue	ID+Q	NA	0.0235	mg/Kg	SW-846 8270C

ATTACHMENT B

QUALITY ASSURANCE PROJECT PLAN REPLACEMENT PAGES

APPENDIX E

QA/QC INFORMATION – FISH TISSUE

TABLE E-1 - ANALYTES AND METHOD SPECIFICATIONS

MEDIA: FISH TISSUE

Intended Use: Quantitative risk assessment - human health

QC Level: Level IV for all sample sets

Laboratory Parameters	Sampling Method	Measurement Technique	Preparation Method SOP	Analysis Method SOP
Chemical Analyses				
Total Moisture	BESI-SOP-303; BESI-SOP-304	Gravimetric	NA	SM 2540G
Percent Lipids	BESI-SOP-303; BESI-SOP-304	Extraction	NA	Batelle 6.11
Lead, Silver	BESI-SOP-303; BESI-SOP-304	ICP-AES	3050B	SW846 6010B
4,4'-DDE, 4,4'-DDT	BESI-SOP-303; BESI-SOP-304	GC	GCAL EXT-073	SW846 8081A
benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, hexachlorobenzene, and indeno(1,2,3-cd)pyrene	BESI-SOP-303; BESI-SOP-304	GC/MS	GCAL EXT-073	SW846 8270C-SIM

TABLE E-2 - SAMPLE CONTAINER, PRESERVATION AND HOLDING TIME REQUIREMENTS

MEDIA: FISH TISSUE

Laboratory Parameters	Container	Preservation	Holding Time[1]
Percent Lipids	PTFE, G	Cool to 4° C or Freeze at -20° C +/- 10° C (archive samples)	1 year
Lead, Silver	PTFE, G	Cool to 4° C or Freeze at -20° C +/- 10° C (archive samples)	6 months
4,4'-DDE, 4,4'-DDT	PTFE, G	Cool to 4° C or Freeze at -20° C +/- 10° C (archive samples)	14 days (preparation) 40 days (analysis)
benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, hexachlorobenzene, and indeno(1,2,3-cd)pyrene	PTFE, G	Cool to 4° C or Freeze at -20° C +/- 10° C (archive samples)	14 days (preparation) 40 days (analysis)

PTFE – Polytetrafluoroethylene (Teflon) G – Glass

Note:

1. Fish tissue samples (finfish and crab) may be archived for up to 6 months prior to analysis (EPA, 2000b. *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Volume 1*. OW/EPA 823-B-00-007, November).

TABLE E-3 - FIELD QUALITY CONTROL SAMPLE REQUIREMENTS

MEDIA: FISH TISSUE

Laboratory Parameters	Trip Blanks	Equipment/Field Blanks	Field Duplicates	Matrix Spikes/ Matrix Spike Duplicates
Total Moisture	NA[1]	NA	1 per species	NA
Percent Lipids	NA	NA	1 per species	NA
Lead, Silver	NA	4[2]	1 per species	1 per fish species[3]
4,4'-DDE, 4,4'-DDT	NA	4[2]	1 per species	1 per fish species[3]
benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, hexachlorobenzene, and indeno(1,2,3-cd)pyrene	NA	4[2]	1 per species	1 per fish species[3]

Notes:
1. NA = Not applicable for the analyte and sampling techniques.
2. One equipment blank sample collected for each of the first four tissue processing events.
3. One Matrix Spike/Matrix Spike Duplicate (MS/MSD) sample collected for each of the three fish species. A MS/MSD sample will not be collected for the crab samples.

TABLE E-4 - QUALITY CONTROL OBJECTIVES

MEDIA: FISH TISSUE

Analyte	Method[1]	Target MDL[2] (mg/Kg)	Target MQL[3] (mg/Kg)	Max %RSD[4]	Min r (Correl. Coeff)	CCV[5] REC.	Blank Conc.[6]	LCS MS/MSD REC.[7]	Analytical Dup RPD	Field Dup RPD	SU REC.[7]	IS Area[8]
Total Moisture	SM 2540G	0.01	0.01	NA	NA	NA	NA	NA	30	50	NA	NA
Percent Lipids	Batelle 6.11	0.01	0.01	NA	NA	NA	<MQL	70-130	30	50	NA	NA
Lead	6010B	0.187	0.6	NA	0.995	90-110	<MQL	70-130	30	50	NA	NA
Silver	6010B	0.053	0.4	NA	0.995	90-110	<MQL	70-130	30	50	NA	NA
4,4'-DDE	8081A	0.00745	0.025	20	0.99	+/-15	<MQL	60-140	40	50	60-140	NA
4,4'-DDT	8081A	0.00595	0.025	20	0.99	+/-15	<MQL	60-140	40	50	60-140	NA
Benzo(a)pyrene	8270C-SIM	0.0881	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Benzo(a)anthracene	8270C-SIM	0.0584	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Benzo(b)fluoranthene	8270C-SIM	0.0467	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Benzo(k)fluoranthene	8270C-SIM	0.0392	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Chrysene	8270C-SIM	0.0298	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Dibenz(a,h)anthracene	8270C-SIM	0.0494	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Hexachlorobenzene	8270C-SIM	0.0290	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Indeno(1,2,3-cd)pyrene	8270C-SIM	0.0235	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%

Notes:

1. Unless otherwise indicated, analytical methods are from EPA SW-846 "Test Methods for Evaluating Solid Waste."

2. Method Detection Limits are determined by the laboratory using the procedures in 40 CFR Part 136, Appendix B. MDLs for tissue analysis are on a wet weight basis. (Sample results will also be on a wet weight basis.) The MDL listed here is Gulf Coast Analytical Laboratories, Inc. (GCAL) current MDL and applies for the November 2006 sampling event. MDLs for future events may vary. Additionally, Sample Detection Limits (which are adjusted to reflect sample-specific actions, such as dilution or use of smaller aliquot sizes than prescribed in the analytical method, and take into account sample characteristics, sample preparation, sample cleanup, and analytical adjustments) may be higher.
3. Method Quantitation Limits correspond to the lowest non-zero concentration standard in the laboratory's initial calibration curve calculated using the normal aliquot sizes and final volumes prescribed in the analytical method. The MQL listed here is based on typical laboratory performance. Sample Quantitation Limits (which are adjusted to reflect sample-specific actions, such as dilution or use of smaller aliquot sizes than prescribed in the analytical method, and take into account sample characteristics, sample preparation, sample cleanup, and analytical adjustments) may be higher.
4. Per the analytical methods for organics, the %RSD for an individual analyte may exceed the criteria as long as the mean %RSD for all calibrated analytes is within the criteria. For data qualification purposes, the %RSD criteria will be applied to each individual analyte and the data flagged accordingly. For GC/MS analyses, the analytical method also includes criteria for the Relative Response Factor (RRF) for a subset of the calibrated analytes. For data qualification purposes, a minimum RRF criteria of 0.05 will be applied to each individual analyte and the data flagged accordingly.
5. Per the analytical methods for organics, the CCV response for an individual analyte may be outside the criteria as long as the mean CCV response for all calibrated analytes is within the criteria. For data qualification purposes, the CCV criteria will be applied to each individual analyte and the data flagged accordingly. For inorganics, the same limits apply for the ICV.
6. Criteria apply for all blank types including method blanks, calibration blanks, equipment blanks, and trip blanks. For data qualification purposes, blank concentrations for all positively identified analytes (i.e., above the detection limit) will be assessed and the data flagged accordingly. However, laboratory corrective action is instituted only for concentrations above the quantitation limit.
7. Criteria are for data qualification purposes. The laboratory shall monitor performance and institute routine corrective action using the laboratory-established limits but the lower limit shall not be below 10%.
8. Expressed as percent of area for the internal standard in the sample as compared to that in the daily midpoint calibration standard.

ATTACHMENT A

FIELD SAMPLING PLAN REPLACEMENT PAGES

5.9.4.1 Finfish Tissue

Finfish will be weighed, measured, scaled, and rinsed with DI water. Data will be recorded on tissue processing data sheets. Once a fish has been scaled it will be placed in clean plastic bags and stored on ice until all samples have been scaled. Edible tissue filets (with skin) will be processed on pre-cleaned Teflon cutting boards with pre-cleaned stainless steel filet knives. EPA Guidance (EPA, 2000) recommends that the fillets of scaled finfish (e.g., red drum, black drum, croaker, seatrout, etc.) be analyzed with the skin intact. Edible filets will be collected from both sides of the fish, placed on hexane-rinsed aluminum foil, and weighed in grams. The filets will then be placed in glass sample jars provided by the laboratory

Most fish samples will be taken from a single specimen, but if a single fish can not provide the required sample volume, the fillets from multiple fish will be composited. If more than one organism is to be composited to complete a sample, the individual organisms will be filleted, filets will be weighed, and the filets will be combined and placed in glass sample jars provided by the laboratory

Sample jars will be labeled with collection date, time, personnel, species, and station ID. The sample jar will then be placed in a Ziploc bag and stored at 4 degrees Celsius. A Chain of Custody will be completed following the procedures detailed in Section 6.1.2.

5.9.4.2 Blue Crab Tissue

Blue crabs will be weighed, measured, rinsed with DI water, and placed on pre-cleaned Teflon cutting boards. Data will be recorded on tissue processing data sheets. Edible blue crab tissue (i.e., muscles inside chelipeds and musculature for periopods) will be removed using pre-cleaned scalpels and placed on hexane rinsed aluminum foil for weighing.

In order to provide the analytical laboratory with a sufficient quantity of tissue for all analyses, the edible tissue from five adult blue crabs from the same zone will be composited for each sample. The weight of edible tissue will be recorded for each individual crab and for the total edible tissue per sample. A pre-cleaned sample jar will be labeled with the collection date, time, personnel, species, and station ID.

The sample jar will then be placed in a Ziploc bag and stored at 4 degrees Celsius. A Chain of Custody will be completed for all samples collected.

5.10 DECONTAMINATION PROCEDURES

Site personnel will perform decontamination in accordance with PBW SOP No.13: Equipment Decontamination (Appendix A) will be performed for all equipment when brought on the Site, between sample locations, when necessary between sample intervals, and before removing it from the Site. Certain disposal equipment meant to be used only once and discarded will be decontaminated prior to use, unless the equipment is properly packaged and sealed. All non-disposable components of the sampling equipment that will not have direct contact with the samples collected (i.e., augers, probe rods, drill pipe, etc.) will be decontaminated as follows:

- Potable water rinse;
- Liqui-nox® detergent wash;
- Potable water rinse;
- De-ionized (DI) water rinse (3 times); and
- Air dry.

All sampling equipment that contacts the soils, groundwater, sediments, or surface waters that will be submitted for analyses (i.e. coring equipment, compositing bowls, scoops and spoons) will be decontaminated as follows:

- Potable water rinse;
- Liqui-nox® detergent wash;
- DI water rinse;
- Liqui-nox® detergent wash;
- DI water rinse (3 times); and
- Air dry.

STANDARD OPERATING PROCEDURE
SOP-BESI-304

TITLE: Collection of Blue Crabs Using Commercial Crab Traps

The attached Standard Operating Procedure was revised by:

Katy Garcia		09/14/05
Name	**Signature**	**Date**

The attached Standard Operating Procedure was reviewed by:

David Marhofer		09/14/05
Name	**Signature**	**Date**

Revision No. 1

Collection of Blue Crabs Using Commercial Crab Traps

1.0 PURPOSE AND APPLICABILITY

This SOP describes the proper procedures for collecting legal size Blue Crabs with commercial crab traps.

2.0 DEFINITIONS

There are no definitions applicable for this SOP.

3.0 HEALTH AND SAFETY CONSIDERATIONS

3.1 Nitrile gloves and approved safety glasses should be worn when conducting this procedure in order to protect personnel from possible contaminants that may be present in the water.

3.2 Proper lifting techniques should be utilized when handling heavy objects.

3.3 Personnel will be trained on how to handle blue crabs to avoid cuts caused by chelae or shells.

3.4 General boat safety criteria should be practiced at all times and includes awareness of other ship activities, wearing life jackets, monitoring marine radio, etc.

4.0 QUALITY ASSURANCE CONSIDERATIONS

This SOP must not be implemented until trained personnel are available to conduct this procedure. All necessary equipment, space, containers, and documentation materials must also be available before this procedure is conducted.

5.0 RESPONSIBILITIES

The project manager must assign a task manager to conduct this procedure and provide all the necessary information and data sheets to conduct the study. The task manager has responsibility for assuring that:

- All necessary equipment is available
- Health and safety precautions are taken
- Enough information has been provided to locate sample area and sample stations.

6.0 EQUIPMENT AND MATERIALS

- Commercial Crab Traps
- Floats and Ropes
- Bait
- Permit Tags
- Plastic bucket or tub (sorting container)
- Re-sealable plastic bags
- Labels
- Permanent marker pens
- Ice chest with ice

7.0 TRAINING

Prior to conducting this SOP, responsible personnel (task manager and technicians) must read and understand this SOP.

8.0 METHODS

8.1 A rope greater then the depth of the water where sampling will occur should be attached to the top of the crab trap. The opposite end of the rope may have a float attached to it when sampling in open water. If sampling next to structures or land the rope may not need a float. Permit tags should be secured to the crab traps.

8.2 Crab traps will be baited with commercial crab bait (when available) or bait fish captured from established 'clean' areas.

8.3 Traps will be placed in water so as to insure they are set right side up. It may be necessary to weight down or tie traps off in areas of high current or when set close to heavy ship traffic.

8.4 The catch should be placed in a bucket or tub for sorting. After target organisms are removed, the remainder should be returned to the water.

8.5 Collected Blue Crabs will be placed in labeled re-sealable plastic bags, and put on ice in a cooler.

9.0 QUALITY CONTROL CHECKS

Clean gloves will be worn at all times when handling the sampling equipment and samples.

10.0 DOCUMENTATION

General descriptive information on the sample site, catch, and field data should be entered in the field data log. Observations may include the following:

- Characteristics of the sample area, bottom type, vegetation, and water depth,
- Size of the area sampled,
- List of species collected, and,
- Number and/or weight of organisms collected,
- Water temperature, salinity, and conductivity.

NOTE:

FOLLOW ONLY THE MOST RECENT ISSUE OF THIS SOP.

STANDARD OPERATING PROCEDURE
SOP-BESI-509

TITLE: Fish Tissue Processing

The attached Standard Operating Procedure was revised by:

Neil Henthorne	Neil Henthorne	11/16/06
Name	**Signature**	**Date**

The attached Standard Operating Procedure was reviewed by:

David Marhofer		11/16/06
Name	**Signature**	**Date**

Revision No. 2

FISH TISSUE PROCESSING

1.0 PURPOSE AND APPLICABILITY

This procedure provides the basic methodologies for laboratory preparation of edible fish tissue samples for analysis.

2.0 DEFINITIONS

There are no definitions applicable for this SOP.

3.0 HEALTH AND SAFETY CONSIDERATIONS

3.1 Nitrile gloves should be worn when performing this procedure.

3.2 Safety glasses should be worn while filleting tissue and while using hexane.

3.3 Use of hexane should be under a fume hood or in a well ventilated area.

4.0 QUALITY ASSURANCE CONSIDERATIONS

This SOP must not be implemented until trained personnel are available to conduct this procedure. All necessary equipment, space, containers, and documentation materials must also be available before this procedure is performed.

5.0 RESPONSIBILITIES

The project manager must assign a task manager to conduct this procedure. The task manager has responsibility for assuring that:

- All necessary equipment is available; and
- All samples are prepared according to this procedure.

6.0 EQUIPMENT AND MATERIALS

- Nitrile gloves
- Fish scaler
- Aluminum foil
- Electric fillet knife, fillet knife
- Stainless steel fillet blades
- Cutting board
- Top loading balance (0.01 gm)
- Cooler (chest or upright)
- Decontamination materials: DI water, soap, ultra-pure hexane
- Labels
- Marking pens
- Freezer grade Zip Loc
- Finfish processing forms
- Chain-of-Custody forms

7.0 TRAINING

Prior to performing this SOP, responsible personnel (task manager and technicians) must read and understand this SOP.

8.0 METHODS

8.1 Pre-Preparation

Unwrap and thoroughly rinse each fish with DI water to remove any gross field contaminants. Measure, weigh, and label each fish according to appropriate SOP (SOP-BESI-508).

8.2 Fish Scale Removal Procedure

Remove fish scales from fish so as scales will not be processed into the edible tissue sample. Wear nitrile gloves and safety glasses when scaling fish. Once the fish has been scaled, rinse the fish with DI water, and store on ice until the sample can be filleted.

8.3 Body Tissue Removal Procedure

Fillet the fish with your choice of pre-cleaned utensils (electric fillet knife, regular fillet knife). Sample fillet should represent the edible portion of each fish. Record the weight of the tissue removed from each fish. Place tissue sample into pre-cleaned sample jar, double-bag the sample jar in re-sealable Ziploc bags, and place in secure cold storage.

8.4 Decontamination Procedures

Decontamination of the equipment used should follow this general sequence:

1. Rinse with tap water and brush away large pieces of tissue.
2. Clean apparatus with soapy water and brush.
3. Rinse soap away first with tap water and then with DI water.
4. Rinse thoroughly with ultra-pure hexane.
5. Finally, triple rinse with DI water.

8.5 Equipment Storage

After use of all equipment thoroughly decontaminate and wrap or cover all items with clean hexane-rinsed aluminum foil. Store equipment in an appropriate location.

8.6 Sample Handling and Shipment

Store samples in secure cold storage until shipment. Ship samples in coolers to the analytical laboratory via overnight carrier.

9.0 QUALITY CONTROL CHECKS

Quality control checks required for fish tissue processing may consist of rinsate blanks to ensure the processing equipment (i.e., fillet knives) are free of chemical contamination. If required, rinsate blanks shall be collected by first decontaminating the equipment using the appropriate procedure for the analyses being conducted. Next, the equipment will be either soaked or rinsed with deionized water and collected for chemical analysis.

10.0 DOCUMENTATION

When sending tissue samples to the analytical laboratory, follow the appropriate SOP for chain-of-custody and shipping documentation requirements. Indicate in laboratory logbook that samples have been prepared and sent to the analytical laboratory for analysis. Sign and date all chart forms and logbook pages, as appropriate.

TABLE B-5 - METHOD SELECTION WORKSHEET - FISH TISSUE

Analytes		Reporting Requirement (Y or N)	Medium	Critical Parameters				Routine Available Methods
Chemicals of Interest	CAS No.			ID Only (ID) or ID Plus Quantitation (ID+Q)	Preliminary Screening Value (PSV)	Target Method Detection Limit[1]	Units	
METALS								
Lead	7439-92-1	Y	Fish Tissue	ID+Q	NA	0.187	mg/Kg	SW-846 6010B
Silver	7440-22-4	Y	Fish Tissue	ID+Q	NA	0.053	mg/Kg	SW-846 6010B
PESTICIDES								
4,4'-DDE	72-55-9	Y	Fish Tissue	ID+Q	NA	0.00745	mg/Kg	SW-846 8081A
4,4'-DDT	50-29-3	Y	Fish Tissue	ID+Q	NA	0.00595	mg/Kg	SW-846 8081A
SVOCs								
Benzo(a)anthracene	56-55-3	Y	Fish Tissue	ID+Q	NA	0.0881	mg/Kg	SW-846 8270C
Benzo(a)pyrene	50-32-8	Y	Fish Tissue	ID+Q	NA	0.0584	mg/Kg	SW-846 8270C
Benzo(b)fluoranthene	205-99-2	Y	Fish Tissue	ID+Q	NA	0.0467	mg/Kg	SW-846 8270C
Benzo(k)fluoranthene	207-08-9	Y	Fish Tissue	ID+Q	NA	0.0392	mg/Kg	SW-846 8270C
Chrysene	218-01-9	Y	Fish Tissue	ID+Q	NA	0.0298	mg/Kg	SW-846 8270C
Dibenz(a,h)anthracene	53-70-3	Y	Fish Tissue	ID+Q	NA	0.0494	mg/Kg	SW-846 8270C
Hexachlorobenzene	118-74-1	Y	Fish Tissue	ID+Q	NA	0.029	mg/Kg	SW-846 8270C
Indeno(1,2,3-cd)pyrene	193-39-5	Y	Fish Tissue	ID+Q	NA	0.0235	mg/Kg	SW-846 8270C

ATTACHMENT B

QUALITY ASSURANCE PROJECT PLAN REPLACEMENT PAGES

APPENDIX E

QA/QC INFORMATION – FISH TISSUE

TABLE E-1 - ANALYTES AND METHOD SPECIFICATIONS

MEDIA: FISH TISSUE

Intended Use: Quantitative risk assessment - human health

QC Level: Level IV for all sample sets

Laboratory Parameters	Sampling Method	Measurement Technique	Preparation Method SOP	Analysis Method SOP
Chemical Analyses				
Total Moisture	BESI-SOP-303; BESI-SOP-304	Gravimetric	NA	SM 2540G
Percent Lipids	BESI-SOP-303; BESI-SOP-304	Extraction	NA	Batelle 6.11
Lead, Silver	BESI-SOP-303; BESI-SOP-304	ICP-AES	3050B	SW846 6010B
4,4'-DDE, 4,4'-DDT	BESI-SOP-303; BESI-SOP-304	GC	GCAL EXT-073	SW846 8081A
benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, hexachlorobenzene, and indeno(1,2,3-cd)pyrene	BESI-SOP-303; BESI-SOP-304	GC/MS	GCAL EXT-073	SW846 8270C-SIM

TABLE E-2 - SAMPLE CONTAINER, PRESERVATION AND HOLDING TIME REQUIREMENTS

MEDIA: FISH TISSUE

Laboratory Parameters	Container	Preservation	Holding Time[1]
Percent Lipids	PTFE, G	Cool to 4° C or Freeze at -20° C +/- 10° C (archive samples)	1 year
Lead, Silver	PTFE, G	Cool to 4° C or Freeze at -20° C +/- 10° C (archive samples)	6 months
4,4'-DDE, 4,4'-DDT	PTFE, G	Cool to 4° C or Freeze at -20° C +/- 10° C (archive samples)	14 days (preparation) 40 days (analysis)
benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, hexachlorobenzene, and indeno(1,2,3-cd)pyrene	PTFE, G	Cool to 4° C or Freeze at -20° C +/- 10° C (archive samples)	14 days (preparation) 40 days (analysis)

PTFE – Polytetrafluoroethylene (Teflon) G – Glass

Note:

1. Fish tissue samples (finfish and crab) may be archived for up to 6 months prior to analysis (EPA, 2000b. *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Volume 1.* OW/EPA 823-B-00-007, November).

TABLE E-3 - FIELD QUALITY CONTROL SAMPLE REQUIREMENTS

MEDIA: FISH TISSUE

Laboratory Parameters	Trip Blanks	Equipment/Field Blanks	Field Duplicates	Matrix Spikes/ Matrix Spike Duplicates
Total Moisture	NA[1]	NA	1 per species	NA
Percent Lipids	NA	NA	1 per species	NA
Lead, Silver	NA	4[2]	1 per species	1 per fish species[3]
4,4'-DDE, 4,4'-DDT	NA	4[2]	1 per species	1 per fish species[3]
benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, hexachlorobenzene, and indeno(1,2,3-cd)pyrene	NA	4[2]	1 per species	1 per fish species[3]

Notes:
1. NA = Not applicable for the analyte and sampling techniques.
2. One equipment blank sample collected for each of the first four tissue processing events.
3. One Matrix Spike/Matrix Spike Duplicate (MS/MSD) sample collected for each of the three fish species. A MS/MSD sample will not be collected for the crab samples.

TABLE E-4 - QUALITY CONTROL OBJECTIVES

MEDIA: FISH TISSUE

Analyte	Method[1]	Target MDL[2] (mg/Kg)	Target MQL[3] (mg/Kg)	Max %RSD[4]	Min r (Correl. Coeff)	CCV[5] REC.	Blank Conc. [6]	LCS MS/MSD REC.[7]	Analytical Dup RPD	Field Dup RPD	SU REC.[7]	IS Area[8]
Total Moisture	SM 2540G	0.01	0.01	NA	NA	NA	NA	NA	30	50	NA	NA
Percent Lipids	Batelle 6.11	0.01	0.01	NA	NA	NA	<MQL	70-130	30	50	NA	NA
Lead	6010B	0.187	0.6	NA	0.995	90-110	<MQL	70-130	30	50	NA	NA
Silver	6010B	0.053	0.4	NA	0.995	90-110	<MQL	70-130	30	50	NA	NA
4,4'-DDE	8081A	0.00745	0.025	20	0.99	+/-15	<MQL	60-140	40	50	60-140	NA
4,4'-DDT	8081A	0.00595	0.025	20	0.99	+/-15	<MQL	60-140	40	50	60-140	NA
Benzo(a)pyrene	8270C-SIM	0.0881	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Benzo(a)anthracene	8270C-SIM	0.0584	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Benzo(b)fluoranthene	8270C-SIM	0.0467	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Benzo(k)fluoranthene	8270C-SIM	0.0392	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Chrysene	8270C-SIM	0.0298	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Dibenz(a,h)anthracene	8270C-SIM	0.0494	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Hexachlorobenzene	8270C-SIM	0.0290	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%
Indeno(1,2,3-cd)pyrene	8270C-SIM	0.0235	0.167	15	0.99	+/-20	<MQL	60-140	40	50	60-140	-50 to +100%

Notes:

1. Unless otherwise indicated, analytical methods are from EPA SW-846 "Test Methods for Evaluating Solid Waste."

2. Method Detection Limits are determined by the laboratory using the procedures in 40 CFR Part 136, Appendix B. MDLs for tissue analysis are on a wet weight basis. (Sample results will also be on a wet weight basis.) The MDL listed here is Gulf Coast Analytical Laboratories, Inc. (GCAL) current MDL and applies for the November 2006 sampling event. MDLs for future events may vary. Additionally, Sample Detection Limits (which are adjusted to reflect sample-specific actions, such as dilution or use of smaller aliquot sizes than prescribed in the analytical method, and take into account sample characteristics, sample preparation, sample cleanup, and analytical adjustments) may be higher.
3. Method Quantitation Limits correspond to the lowest non-zero concentration standard in the laboratory's initial calibration curve calculated using the normal aliquot sizes and final volumes prescribed in the analytical method. The MQL listed here is based on typical laboratory performance. Sample Quantitation Limits (which are adjusted to reflect sample-specific actions, such as dilution or use of smaller aliquot sizes than prescribed in the analytical method, and take into account sample characteristics, sample preparation, sample cleanup, and analytical adjustments) may be higher.
4. Per the analytical methods for organics, the %RSD for an individual analyte may exceed the criteria as long as the mean %RSD for all calibrated analytes is within the criteria. For data qualification purposes, the %RSD criteria will be applied to each individual analyte and the data flagged accordingly. For GC/MS analyses, the analytical method also includes criteria for the Relative Response Factor (RRF) for a subset of the calibrated analytes. For data qualification purposes, a minimum RRF criteria of 0.05 will be applied to each individual analyte and the data flagged accordingly.
5. Per the analytical methods for organics, the CCV response for an individual analyte may be outside the criteria as long as the mean CCV response for all calibrated analytes is within the criteria. For data qualification purposes, the CCV criteria will be applied to each individual analyte and the data flagged accordingly. For inorganics, the same limits apply for the ICV.
6. Criteria apply for all blank types including method blanks, calibration blanks, equipment blanks, and trip blanks. For data qualification purposes, blank concentrations for all positively identified analytes (i.e., above the detection limit) will be assessed and the data flagged accordingly. However, laboratory corrective action is instituted only for concentrations above the quantitation limit.
7. Criteria are for data qualification purposes. The laboratory shall monitor performance and institute routine corrective action using the laboratory-established limits but the lower limit shall not be below 10%.
8. Expressed as percent of area for the internal standard in the sample as compared to that in the daily midpoint calibration standard.